

REMARKS

Reconsideration of the application is requested in view of the modifications above and the remarks below. Applicants have indicated in Claim 1 that tungsten oxide powders are reduced. The addition of "oxide" is merely to clarify the claim. Support for this can be found on page 4, line 25 ("[t]he known reduction of tungsten oxide...", page 5, lines 4-5 ("[t]he present invention starts out with the idea that crystal growth during the reduction of tungsten oxide..."), page 6, lines 19-20 ("[i]n order to carry out the process of the invention, tungsten oxide,....., is mixed...") Applicants have also modified the specification accordingly.

1. Rejection Under 35 USC 102

The Office Action rejected Claims 1, 2, 6, 7, 9-10, and 12 under 35 USC 102 over U.S. Pat. No. 4,402,737 (Kronenwetter). The rejection should be withdrawn in view of the remarks below.

It is well settled that in order for a prior art reference to anticipate claim, the reference must disclose each and every element of the claim with sufficient clarity to prove its existence in prior art. The disclosure requirement under 35 USC 102 presupposes knowledge of one skilled in art of claimed invention, but such presumed knowledge does not grant license to read into prior art reference teachings that are not there. See *Motorola Inc. v. Interdigital Technology Corp.* 43 USPQ2d 1481 (1997 CAFC).

Applicants' invention, as encompassed by Claims 1, 2, 6, 7, 9-10, and 12, relates to a process that reduces tungsten oxide powders, molybdenum oxide powders, or mixtures thereof, in the presence of alkali metal compounds. The process prepares tungsten powder, molybdenum powder, mixtures thereof, or a carbide; in which at least two alkali metal compounds are used in a ratio so that mixed alkali tungstate or molybdate formed in an intermediate step ((Li, Na, K)₂WO_z, (Li, Na, K)₂MoO_z) having a melting point of less than about 550°C. The value of z is from 3 to 4. In one embodiment, the invention relates to a tungsten metal powder prepared according to such a method. In another embodiment, the invention relates to a tungsten carbide powder prepared according to such a process.

Kronenwetter discloses a process for producing tungsten metal powder or tungsten carbide powder by a process, in which a lithium compound is added to a tungsten oxide starting powder prior to reduction (See Abstract).

Kronenwetter does not disclose each and every element of Applicants' invention as encompassed by the rejected claims with sufficient clarity to prove Applicants' invention existed in the prior art. The Office Action relied on Column 2, lines 30-35 of Kronenwetter, indicating that sodium and potassium may be present in addition to lithium. This does not support the rejection.

Kronenwetter discloses at Column 2, lines 27-35 that the tungsten oxide starting powder is typically of high purity and contains less than about 1 percent by weight, preferably less than about 0.5 percent by weight of impurities, which can include sodium and potassium. The amount of sodium and potassium in commercially available tungsten oxide is in the ppm range. This is supported by the results of oxide analysis in Kronenwetter's Table 1 (Col. 4, line 55), in which Kronenwetter indicates that the amounts of sodium and potassium are below the detection limit of 5 and 10 ppm, respectively. Such disclosures clearly disclose sodium and potassium as undesired impurities. Such disclosures fail to disclose a process that reduces tungsten oxide powders, in the presence of alkali metal compounds, and prepares a tungsten powder, molybdenum powder, mixtures thereof, or a carbide, such that at least two alkali metal compounds are used in a ratio so that mixed alkali tungstate or molybdate formed in an intermediate step $((\text{Li}, \text{Na}, \text{K})_2 \text{WO}_2, (\text{Li}, \text{Na}, \text{K})_2 \text{MoO}_2)$ has a melting point of less than about 550°C, as claimed by Applicants.

In other words, Kronenwetter does not disclose using "at least two alkali metal compounds," as claimed by Applicants. Kronenwetter does not disclose adding a second alkali metal compound as required by Applicants' invention. Kronenwetter does not disclose a process "in which at least two alkali metal compounds are used in a ratio so that mixed alkali tungstate or molybdate formed in an intermediate step $((\text{Li}, \text{Na}, \text{K})_2 \text{WO}_2, (\text{Li}, \text{Na}, \text{K})_2 \text{MoO}_2)$ having a melting point of less than about 550°C." Kronenwetter discloses potassium and sodium as undesired impurities used in trace amounts. Kronenwetter does not disclose each and every element of the rejected claims with sufficient clarity to prove that the invention encompassed by these claims existed in the prior art. Reconsideration is requested.

2. Rejection Under 35 USC 103

The Office Action rejected Claims 3-5, 8 and 11 under 35 USC 103 over Kronenwetter. The rejection should be withdrawn.

It is well settled that to establish a *prima facie* case of obviousness, the USPTO must satisfy all of the following requirements. First, the prior art relied upon, coupled with the knowledge generally available in the art at the time of the invention, must contain some suggestion or incentive that would have motivated the skilled artisan to modify a reference or to combine references. *In re Fine*, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). Second, the proposed modification must have had a reasonable expectation of success, as determined from the vantage point of one of ordinary skill in the art at the time the invention was made. *Amgen v. Chugai Pharmaceutical Co.* 18 USPQ 2d 1016, 1023 (Fed Cir, 1991), *cert. denied* 502 U.S. 856 (1991). Third, the prior art reference or combination of references must teach or suggest all of the limitations of the claims. *In re Wilson*, 165 USPQ 494, 496, (CCPA 1970). The rejection should be withdrawn in view of the remarks below.

Applicants' invention, as encompassed by Claims 3-5, 8 and 11, relates to a process that reduces tungsten oxide powders, molybdenum oxide powders, or mixtures thereof, in the presence of alkali metal compounds, and prepares tungsten powder, molybdenum powder, mixtures thereof, or a carbide. At least two alkali metal compounds are used in a ratio so that mixed alkali tungstate or molybdate formed in an intermediate step $((\text{Li, Na, K})_2 \text{WO}_z, (\text{Li, Na, K})_2 \text{MoO}_z)$ has a melting point of less than about 550°C, in which the value of z is from 3 to 4, in which (i) the alkali compounds are used in a total amount ranging from about 0.2 to about 1.5 mol.%, based on the tungsten and/or molybdenum oxide, or (ii) the alkali compounds have a molar ratio of Na to Li of from about 0.9 to about 1.26 and wherein, in the further presence of a potassium compound, the potassium replaces Na and/or Li up to about 40 mol.%, or (iii) the alkali compounds are used in a mixed salt, or (iv) the tungsten oxide powder is WO_2 and the molybdenum oxide powder is MoO_2 . In another embodiment, Applicants' invention relates to a molybdenum metal powder prepared according to the process of Claim 1.

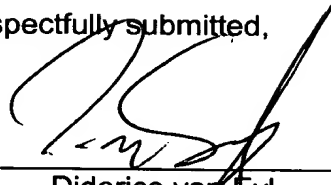
One of ordinary skill in the art following Kronenwetter would not have been motivated to modify Kronenwetter and practice or make Applicants' invention. Kronenwetter does not teach adding a second alkali metal compound as required by Applicants' invention. Kronenwetter teaches that sodium and potassium are impurities, and thus, one of ordinary skill in the art would have been discouraged from using any appreciable amount of such substances. According to Applicants' invention, the second alkali compound is not an impurity of the tungsten oxide powder but is added in an amount sufficient to ensure that certain mixed alkali tungstate or molybdate intermediates having a melting point of less than 550°C are formed. The results of oxide analysis taught by Kronenwetter at Table 1 (col. 4, line 55), teach that the amounts of sodium and potassium are below the detection limit of 5 and 10 ppm respectively. With such teachings, one of ordinary skill in the art simply, not having the benefit of the instant disclosure, would not have had the information necessary to modify Kronenwetter and practice or make Applicants' invention. Reconsideration is requested.

Further, the proposed modification alleged by the Office Action would not have had a reasonable expectation of success, as determined from the vantage point of one of ordinary skill in the art at the time the invention was made. For instance, Kronenwetter fails to suggest the results evidenced by Applicants' Examples. In Example 3 of Applicants' invention (comparison example) tungsten oxide is doped with only lithium prior to reduction. This example represents the process as disclosed by Kronenwetter. Examples 1 and 2 are conducted according to Applicants' invention, i.e., potassium and lithium compounds are added to the tungsten oxide prior to reduction. As can be seen from the examples using two different alkali metals results in an increase of the average particle size (FSSS) of the tungsten carbide produced. Such information evidences the advantages of the presently claimed process over Kronenwetter. As such, one of ordinary skill in the art following Kronenwetter would not have been motivated to modify Kronenwetter, practice or make Applicants' invention and expect the results Applicants have obtained. Reconsideration is requested.

In view of the foregoing amendments and remarks, allowance of all the pending claims is earnestly requested.

Respectfully submitted,

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